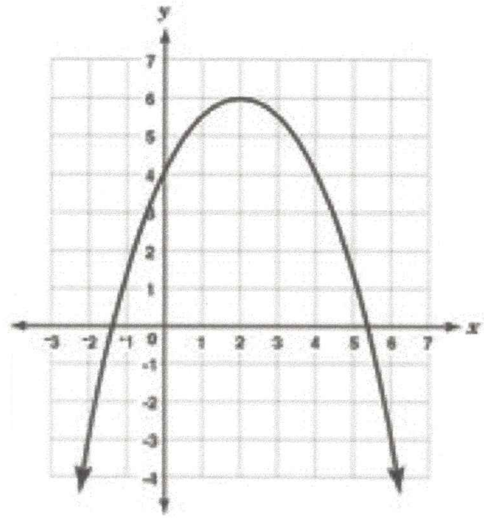
Mr. Michael T. Davis Pre-Calculus	Units 1.7 & 1.8 Practice Quiz October 13, 2016

Name: Solutions

I. Shown is the graph of $y = g(x)$



1. Evaluate:

a. $g(0) = 4$

b. $g(6) = -3$

2. Write the domain and range of the function using interval notation.

D: $(-\infty, \infty)$ R: $(-\infty, 6]$

3. State the interval(s) on which the function is:

a. increasing $(-\infty, 2]$

b. decreasing $[2, \infty)$

c. constant N/A

4. State the interval(s) for which:

a. $g(x) > 0$ $(-1.4, 5.4)$

b. $g(x) < 0$ $(-\infty, -1.4) \cup (5.4, \infty)$

5. State each value:

a. the maximum value of $y = g(x)$ $y = 6$

b. the minimum value of $y = g(x)$ N/A

6. Solve $g(x) = 4$, i.e. for what value(s) of x does $g(x) = 4$ hold true?

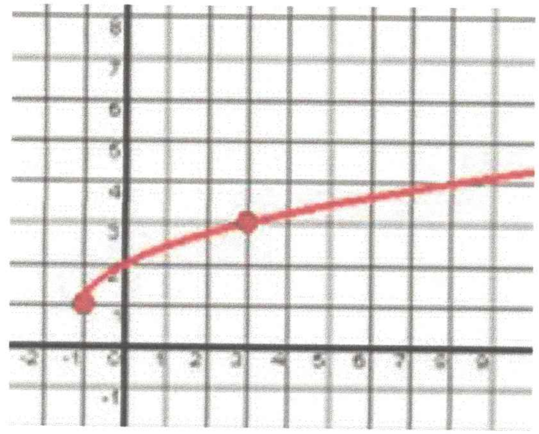
$x = 0$ and $x = 4$

7. State the coordinates of each (approximate if necessary):

a. any x-intercepts $\approx (-1.4, 0)$

b. the y-intercept $(0, 4)$

II. Shown is the graph of $y = f(x)$



1. Evaluate:

a. $f(0) =$ 2

b. $f(8) =$ 4

2. Write the domain and range of the function using interval notation.

D: $[-1, \infty)$ R: $[1, \infty)$

3. State the interval(s) on which the function is:

a. increasing $[-1, \infty)$

b. decreasing N/A

c. constant N/A

4. State the interval(s) for which:

a. $f(x) > 0$ $[-1, \infty)$

b. $f(x) < 0$ N/A

5. State each value:

a. the maximum value of $y = f(x)$ N/A

b. the minimum value of $y = f(x)$ $y = 1$

6. Solve $f(x) = 1$

$x = -1$

7. State the coordinates of each:

a. any x-intercepts N/A

b. the y-intercept $(0, 2)$

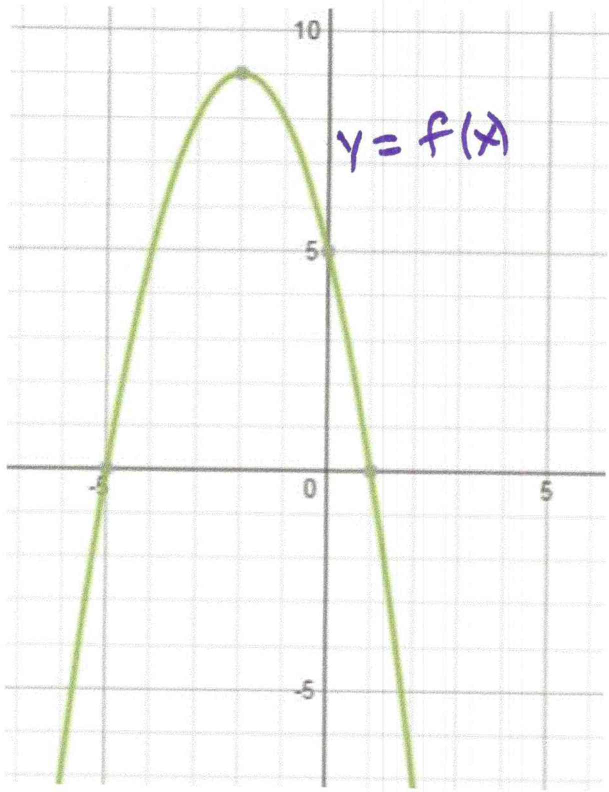
8. Is the graph concave up or concave down?

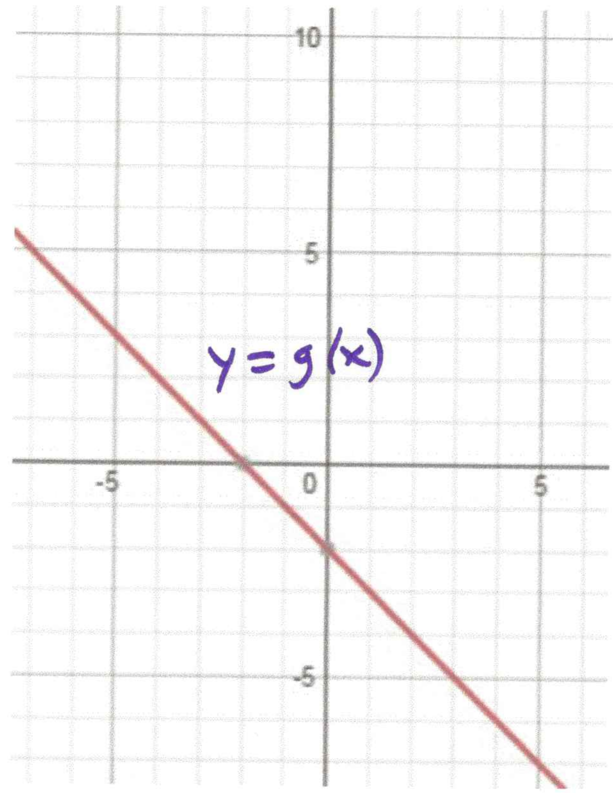
concave down on the interval $[-1, \infty)$

III. Given the two functions $f(x)=x-4$ and $g(x)=2-x^2$:

1. Evaluate $(f+g)(x)$ $x-4+2-x^2$ $x-2-x^2$ $-x^2+x-2$	2. Evaluate $(g-f)(x)$ $2-x^2-(x-4)$ $2-x^2-x+4$ $-x^2-x+6$
3. Evaluate $(fg)(x)$ $(x-4)(2-x^2)$ $2x-x^3-8+4x^2$ $-x^3+4x^2+2x-8$	4. Evaluate $\left(\frac{f}{g}\right)(x)$ $\frac{x-4}{2-x^2}$
5. Evaluate $f(g(x))$ $f(2-x^2)$ $2-x^2-4$ $-x^2-2$	6. Evaluate $(g\circ f)(x)$ $= g(f(x))$ $g(x-4) = 2-(x-4)^2$ $= 2-(x^2-8x+16)$ $= 2-x^2+8x-16$ $= -x^2+8x-14$
7. Evaluate $(f\circ f)(x)$ $= f(f(x))$ $f(x-4) = (x-4)-4$ $= x-8$	8. Evaluate $f(3)\cdot g(3)$ $(3-4)(3-4)$ $(-1)(-1)$ 1
9. Evaluate $f(g(-1))$ $= f(2-(1)^2)$ $f(2-1) = f(1) = 1-4$ $= -3$	10. Evaluate $(g\circ f)(8)$ $= g(f(8))$ $g(8-4) = g(4) = 2-4^2$ $= 2-16 = -14$
11. State the domain and range of $f(g(x))$ $f(2-x^2) = 2-x^2-4$ $= -x^2-2$ $\quad V(0,-2)$ $D: (-\infty,\infty)$ $\quad R: (-\infty,-2]$	12. State the domain and range of $g(f(x))$ from #6 $g(f(x)) = -x^2+8x-14$ $V(4,2)$ $D: (-\infty,\infty)$ $\quad R: (-\infty,2]$

IV. Use the graphs of $y = f(x)$ on the left and $y = g(x)$ on the right below to answer # 13 - 22





1. Evaluate $(f+g)(0) = f(0) + g(0)$ $= 5 + -2 = 3$	2. Evaluate $(g \circ f)(0) =$ $= g(f(0)) = g(5) = -7$
3. Evaluate $f(-1) - g(-1)$ $8 - -1$ 9	4. Evaluate $(f \circ g)(-4) = f(g(-4))$ $f(2) = -7$
5. Evaluate $f(g(-2)) = f(0) = 5$	6. Evaluate $g(g(3)) = g(-5) = 3$
7. Evaluate $f(-3) \cdot g(-3)$ $8 \cdot 1$ 8	8. Evaluate $f(0) \cdot g(0) = 5 \cdot (-2) = -10$
9. Evaluate $\left(\frac{f}{g}\right)(1) = \frac{f(1)}{g(1)} = \frac{0}{-3}$ $= 0$	10. Evaluate $(g-f)(-2) = g(-2) - f(-2)$ $= 0 - 9 = -9$